

WHAT IS CLAIMED IS:

1. A tape circuit substrate comprising:

a base film; and

a plurality of beam leads adjacent the base film, each beam lead including a wavy portion.

2. The tape circuit substrate of claim 1, wherein the base film includes a flexible film.

3. The tape circuit substrate of claim 1, wherein the wavy portion of the beam lead includes a semicircular wavy portion, an S-shaped wavy portion, or a zigzag wavy portion.

4. The semiconductor chip package of claim 1, wherein the base film has a substantially uniform thickness that follows the contours of the beam leads.

5. The semiconductor chip package of claim 4, wherein the base film does not have an opening extending therethrough.

6. A semiconductor chip package comprising:

an integrated circuit chip including a plurality of chip pads formed on a top surface thereof; and

a tape circuit substrate including:

a base film having a top surface; and

a plurality of beam leads formed on the top surface of the base film, wherein one end portion of the beam lead extends toward the chip pad from the base film and bonded to the chip pad, and wherein the extended portion of the beam lead has a wavy portion.

7. The semiconductor chip package of claim 6, wherein the base film includes a flexible film.

8. The semiconductor chip package of claim 6, wherein the wavy portion of the beam lead includes a semicircular wavy portion, an S-shaped wavy portion, or a zigzag wavy portion.

5 9. The semiconductor chip package of claim 6, wherein the wavy portion of the beam lead includes a neck part, a bent part, and an end part.

10. The semiconductor chip package of claim 9, wherein the neck part has a length ranging from about  $40\mu\text{m}$  to about  $80\mu\text{m}$ , the bent part has a length ranging from about  
10  $100\mu\text{m}$  to about  $500$ , and the beam lead has a width of about  $50\mu\text{m}$  or less.

11. The semiconductor chip package of claim 10, wherein the length of the neck part ranges from about  $55\mu\text{m}$  to about  $75\mu\text{m}$ .

15 12. The semiconductor chip package of claim 10, wherein the width of the beam lead ranges from about  $10\mu\text{m}$  to about  $30\mu\text{m}$ .

13. The semiconductor chip package of claim 6, wherein the integrated circuit chip further includes a plurality of chip bumps formed on the chip pads.

20 14. The semiconductor chip package of claim 6, further comprising:  
a sealing resin encapsulating the chip pads and the wavy portions of the beam leads.

25 15. The semiconductor chip package of claim 6, wherein the other end portion of each beam lead is an external connection terminal.

16. The semiconductor chip package of claim 6, wherein the opening is formed on a substantially central portion of the base film so that the chip pads of the integrated circuit chip are exposed through the opening.

30 17. The semiconductor chip package of claim 6, wherein the top surface of the base film faces toward the top surface of the integrated circuit chip.

18. The semiconductor chip package of claim 6, wherein the top surface of the base film faces the same direction as the top surface of the integrated circuit chip.

19. The semiconductor chip package of claim 6, wherein the base film covers the top surface of the integrated circuit chip, and the top surface of the base film faces toward the top surface of the integrated circuit chip.

20. The semiconductor chip package of claim 6, wherein the tape circuit substrate further includes a protective layer covering the beam leads and the top surface of the base film.

21. A semiconductor chip package comprising:  
an integrated circuit chip including a plurality of chip pads formed on a top surface thereof; and  
a tape circuit substrate including a base film, a plurality of beam leads formed on a first surface of the base film, and a plurality of solder balls formed on a second surface of the base film,  
wherein a first end portion of each beam lead is electrically connected to the solder ball, wherein a second end portion of each beam lead is protruded toward the chip pad from the base film and bonded to the chip pad, and wherein the protruded portion of each beam lead has a wavy portion.

22. The semiconductor chip package of claim 21, wherein the tape circuit substrate is located above the top surface of the integrated circuit chip and the chip pads are exposed outside of the tape circuit substrate.

23. The semiconductor chip package of claim 21, wherein the chip pads are arranged along peripheral regions of the top surface of the integrated circuit chip.

24. The semiconductor chip package of claim 21, wherein the chip pads are arranged along central regions of the top surface of the integrated circuit chip.

25. The semiconductor chip package of claim 21, wherein the chip pads are arranged along both the peripheral regions and central regions of the top surface of the integrated circuit chip.

5           26. The semiconductor chip package of claim 21, further comprising:  
an adhesive interposed between the first surface of the tape circuit and the top surface  
of the integrated circuit chip.

10           27. The semiconductor chip package of claim 26, wherein the adhesive includes at  
least one of epoxy resin, elastomeric polymer, and silicone polymer.

28. The semiconductor chip package of claim 21, further comprising:  
a sealing resin encapsulating the chip pads and the wavy portions of the beam leads.

15           29. The semiconductor chip package of claim 21, wherein the wavy portion of the  
beam lead includes a semicircular wavy portion, an S-shaped wavy portion, or a zigzag wavy  
portion.

20           30. The semiconductor chip package of claim 21, wherein the wavy portion of the  
beam lead includes a neck part, a bent part, and an end part.

25           31. The semiconductor chip package of claim 30, wherein the neck part has a  
length ranging from about  $40\mu\text{m}$  to about  $80\mu\text{m}$ , the bent part has a length ranging from about  
 $100\mu\text{m}$  to about 500, and the beam lead has a width of about  $50\mu\text{m}$  or less.

32. The semiconductor chip package of claim 30, wherein the length of the neck  
part ranges from about  $55\mu\text{m}$  to about  $75\mu\text{m}$ .

30           33. The semiconductor chip package of claim 30, wherein the width of the beam  
lead ranges from about  $10\mu\text{m}$  to about  $30\mu\text{m}$ .

34. A semiconductor chip package comprising:  
an integrated circuit chip including a plurality of chip pads formed on a top surface thereof; and  
a tape circuit substrate including:

5 a base film having an opening formed therethrough, the opening defining an inside edge; and

a plurality of beam leads formed on the base film, wherein each beam lead has a portion extending from the edge of the base film into the opening and wherein the extended portion of each beam lead has a wavy portion.

10 35. The semiconductor chip package of claim 34, wherein the wavy portion of the beam lead includes a neck part, a bent part, and an end part.

15 36. The semiconductor chip package of claim 35, wherein the wavy portion of the beam lead extends straight into the opening at the neck part and bends downward toward the chip pads at the bent part.

20 37. The semiconductor chip package of claim 34, wherein the wavy portion is adapted to move laterally during an inner lead bonding process.

25 38. A tape circuit substrate comprising:  
a flexible base film; and  
a plurality of beam leads adjacent the base film, each beam lead including a wavy portion, wherein the base film has a substantially uniform thickness that follows the contours of the beam leads, and , wherein the base film does not have an opening extending therethrough.

30 39. The tape circuit substrate of claim 38, wherein the wavy portion of the beam lead includes a semicircular wavy portion, an S-shaped wavy portion, or a zigzag wavy portion.